

# Update on Manipulation and Exercise: What the Research Says

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Over the past 10 years, there have been many articles evaluating the effectiveness of exercise training and spinal manipulation as single interventions. In addition, several studies have assessed the benefits of exercise in combination with spinal manipulation. Various reviews of the literature and guidelines have summarized the results of research articles on the interaction between spinal manipulation and exercise.

**Although not all studies agree, the majority suggest that there appears to be a synergistic effect when both manipulation and exercise are used in combination.**

From a purely logical perspective, it makes sense that spinal manipulation will add a substantial benefit to exercise. Manipulation by improving range of motion, overcoming abnormal restrictive barriers, increasing and normalizing mechanoreceptive input from articular and periarticular structures, and restoring normal motor programs may allow a joint to derive more benefit from exercise training while minimizing the risk of injury.

## Spinal Manipulation and Stabilization Exercises

Morton published a preliminary prospective study comparing stabilization exercises (four weeks to contract transverse abdominis and improve co-contractions between multifidi and abdominal muscles) versus stabilization exercise and spinal manipulation (SM) (twice a week for four weeks).<sup>1</sup> **At three-month follow-up, the manipulation plus exercise group had 90.3 percent less disability based on the Roland-Morris Disability Index, 100 percent less pain (all subjects in the manipulation plus exercise group were pain-free, while 13 of 14 still had pain in the exercise-alone group), and 46.4 percent greater range of motion. The paper concluded that patients who received manipulation plus exercise improved more and faster than those who received stabilization exercises alone.** Significant differences between groups were seen within the first week. In addition, manipulation also appeared to be cost-effective.

## HVLA Manipulation, Mobilization and Exercise

Aure, et al., published a [longitudinal study](#) with a one-year follow-up in a group of 49 chronic low back pain patients, all of whom were on 100 percent sick leave for more than eight weeks but less than six months due to their low back problems.<sup>2</sup> The patients were randomized into two groups. Both groups received 16 visits over eight weeks to physical therapists who provided either 45 minutes of general and stabilizing exercises or 15 minutes of high-velocity, low-amplitude manipulation and mobilization and 30 minutes of general and stabilizing exercises. There were significant differences between groups at the end of eight weeks, which were sustained at both six-month and 12-month follow-up. **The authors concluded that manual therapy plus exercise showed significantly greater improvements than exercise alone on all outcome measures both on short and long-term follow-up.**

## **The U.K. Back, Exercise and Manipulation (BEAM) Trial**

The U.K. BEAM trial was published in two papers.<sup>3,4</sup> Unlike previous studies, this was a very large scale (N=1,334) longitudinal study (12-month follow-up) comparing low back pain patients randomized into four treatment groups. All groups received "best care" general practice that included advice to stay active, a back care booklet and visits to primary care medical doctors.

The first group received only this treatment. The second group received the same "best care" general practice plus six sessions of spinal manipulation (once per week) performed by a chiropractor, physical therapist or osteopath. The third group received "best care" general practice plus six one-hour general exercise training sessions (one session per week). The fourth group received "best care" general practice plus six weeks of spinal manipulation (once per week), followed by six weeks of general exercise training sessions (one session per week).

The studies concluded that exercise improved disability at three months by 1.4 more than "best care." For SM, additional improvement was 1.6 at three months and 1.0 at 12 months. For SM followed by exercise, additional improvement was 1.9 at three months and 1.3 at 12 months. In addition, the research team concluded that this was the first study to **show convincingly that both manipulation alone and manipulation followed by exercise provide cost-effective additions to care** in "best care" general practice.

## **Manipulation and Exercise for Neck Pain**

The highly regarded and widely cited longitudinal, randomized controlled trial by Bronfort, et al., concluded that **in chronic neck pain patients, there was at least twice as much improvement in SM plus low-tech exercise on all performance measures including range of motion.**<sup>5</sup> In addition, **SM plus exercise was superior to SM alone in terms of pain relief and patient satisfaction at one-year follow-up.** The two-year [follow-up study](#) concluded that there is an advantage of SM plus low-tech rehab exercise and high-tech rehab exercise vs. SM alone over two years in terms of pain reduction.<sup>6</sup> Results suggest treatment including supervised rehab exercise should be considered for chronic neck pain.

## **Guidelines Supporting a Combination Approach**

In recent guidelines, there is a consistent emphasis on exercise training concurrent with spinal manipulation. One publication from the [Council on Chiropractic Guidelines and Practice Parameters](#) (CCGPP) concluded that use of exercise in conjunction with manipulation is likely to [speed and improve outcomes](#) as well as minimize episodic recurrence.<sup>7</sup> From a CCGPP-sponsored consensus paper based on a panel of 40 chiropractors representing a broad spectrum of philosophical and political views, it was concluded that although passive care (including manipulation) for pain or discomfort may be initially emphasized, "active" (i.e., exercise) care should be [increasingly integrated](#) to improve function and return the patient to regular activities.<sup>8</sup> **The ultimate goal of chiropractic care is to improve patients' functional capacity and educate them to independently accept the responsibility for their own health.**

The Workplace Safety Insurance Board of Ontario's Program of Care for Acute Low Back Injuries states that an [evidence-based treatment plan for workers](#) should include **during the subacute phase (five to 12 weeks) a graduated structured quota-based exercise program focusing on strength, flexibility and general**

**fitness aimed at improving the ability to perform physical job function.**<sup>9</sup> Furthermore it notes that when not introduced in the acute phase, a course of SM and/or mobilization (MO) is recommended and continued in the subacute phase when there is clear evidence of both subjective and objective improvement in response to this treatment. The guideline cautions that SM and/or MO in the subacute phase should not constitute the whole program of care and must be used in conjunction with other recommended interventions (exercise prescription).

The American Council on Occupational and Environmental Medicine's (ACOEM) 2008 update of [its earlier guidelines](#), upon which the state of California's Workers' Compensation Guidelines are based, acknowledges that a brief course of MO or SM is [moderately recommended](#) for treatment of chronic persistent low back or neck pain if patients have had good functional outcomes following previous care.<sup>10</sup> One to two SMs or MOs every three to six months is recommended to maintain work status, provided there is adherence to a conditioning program consisting of aerobic and strengthening exercises. This is the first acknowledgement by ACOEM that maintenance care may be effective in maintaining work status.

### **Other Studies of Note**

Freeburger published a paper based on a [survey of a representative sample of individuals](#) (N = 684) with chronic low back pain (CLBP) or chronic neck pain (CNP) who saw a MD, DO, DC or PT in the previous 12 months.<sup>11</sup> Patients were asked if they were prescribed exercise by their health care provider and the type, duration and frequency of their exercises. Findings noted that only 48 percent of patients were prescribed exercise. Sixty-four percent of physical therapy patients were prescribed exercise, compared to 33.1 percent of DCs and only 14.4 percent of MDs/DOs. The authors concluded that exercise is underutilized as a treatment for CLBP or CNP.

A recent review of randomized controlled trials was conducted to [determine the effectiveness of manual therapy](#) (SM, massage, MO, muscle energy technique) for mechanical neck disorders in reducing pain and disability.<sup>12</sup> It found a trend across the three studies evaluating manual therapy with exercise for moderately larger improvements in pain, disability and patient-perceived recovery compared to manual therapy alone. The authors concluded **that the results favor combined therapies, which suggests multimodal care, including manual therapy and exercise, may be of clinical benefit.**

Gross, et al., performed a systematic [review of 88 randomized controlled trials](#) with good methodological scores for conservative treatments (manual therapies, physical medicine methods, medication, and patient education) for mechanical neck disorders.<sup>13</sup> The authors conclude that there is **strong evidence of benefit for maintained pain reduction, improved function and positive perceived effect favoring exercise plus MO and/or SM for intermediate or long-term benefits.**

The [Task Force on Neck Pain and Its Associated Disorders](#) concluded that interventions focusing on regaining function as soon as possible are [more effective](#) than interventions that don't focus on doing so.<sup>14</sup> In addition, the best-evidence synthesis suggests that therapies involving manual therapy (SM and MO) and exercise are more effective than other strategies.

After reviewing these studies and guidelines, it becomes apparent that there is an ever-accumulating database to provide chiropractors with a sound foundation on which to base effective care. **According to recent evidence, the combination of SM and exercise prescription offers our patients synergistic effects**

that are instrumental in regaining **functional capacity, activity tolerance, confidence, and control of their health**. Working together as active partners, the chiropractor and patient form a team with shared responsibility to achieve an improved quality of life. To put it in the simplest of terms, the goals of care are to [minimize pain and maximize function](#).<sup>15</sup>

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